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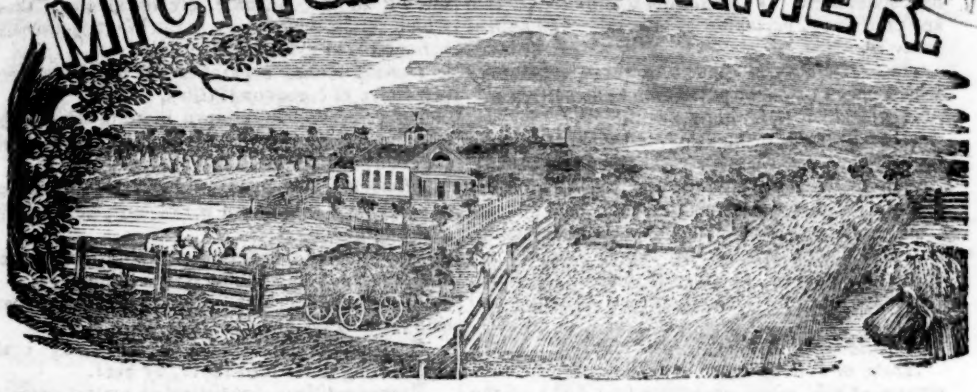

DEVOTED TO

AGRICULTURE, HORTICULTURE, AND RURAL AND DOMESTIC ECONOMY.

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PUBLISHED MONTHLY.

H. HURLBUT, EDITOR.

[For Terms see last page.]

A word to our Patrons.

This number of the Farmer will be sent to nearly all its former subscribers. We ask them to examine it carefully, and if they find in it valuable information, to lend us their patronage for another year. If there are any that do not choose to accompany us through the ensuing volume, let them do us the justice to forward their arrearages, if any, and return this number uninjured.

To Post-masters.

Postmasters are particularly requested to return promptly, and not injured nor written on, this, and all future numbers of the present volume, which may not be taken from their respective offices. We have use for them. We would not willingly complain—but while we have received from many post-masters the most disinterested assistance, there are others who have suffered papers to accumulate in their offices for many months, addressed to persons who had gone to Iowa, Texas, or—somewhere else. This is not right, friends. Read the Post-office regulations over again.

Information relative to subscribers, is to be communicated to publishers by letter, free, and marked "Post Office business."

☞We have associated with us Mr. H. G. Woodhull, as a business partner in the publication of the Michigan Farmer. Mr. Woodhull will visit the different parts of the State in the course of the ensuing year, with a view to extend the circulation and consequent usefulness of this journal. We bespeak for him the co-operation of its friends.

☞We have thought that we could not devote a portion of space to a more acceptable purpose, than by inserting at the opening of another volume, for the benefit of young readers, and all others to whom the terms used in scientific agriculture are not familiar, a brief dictionary, which may serve for reference hereafter.

Our journal is designed to be plain and practical,—but it is impossible to keep pace with the progress of agricultural knowledge, or unfold the whys and wherefores of the operations of nature, without more or less use of these terms. Those of our readers who are already familiar with these definitions, will excuse their insertion for the sake of others, whose case is different.

Dictionary of Terms used in Agriculture.

From Buel's Farmer's Companion.

Absorption, the conversion of a gaseous fluid into a liquid or solid.

Acids, a class of chemical substances, which are so called from their taste. They change vegetable blue colors to red. When they combine with alkalies, or the metalic oxides and earths, they form the compounds called salts. *Mineral acids* are those which are produced from a union of oxygen gas with mineral substances, as sulphur.

Aeriform, having the form and nature of an elastic invisible fluid, like air.

Æther, a volatile liquid, formed of alcohol and an acid.

Aftermath, *Lattermath*, or *Rowen*, terms which express the second crop of grass.

Albumen, a fluid found in living bodies, which coagulates by heat. White of egg is an example.

Alkali, a substance that has the property of combining with, and neutralizing the properties of acids, producing salts by the combination. Alkalies change the vegetable blues and purples to green, red to purple, and yellow to brown.

Alkaline Earths, are so called from their possessing most of the qualities of alkalies, as lime, magnesia, strontia, baryta.

Alluvial Soils, formed by the action of water, as river flats, composed of various and heterogeneous materials.

Alluvium, depositions of soil made by water.

Alternate husbandry, a system of rotation of crops.

Alum, a compound of sulphuric acid, alumine, and potash, or ammonia.

Allumine, the earth of which alum is formed; pure argillaceous clay.

Animalcule, in its general acceptation, a little animal; but, since the invention of the microscope, the term is particularly applied to the myriads of insects, too small to be seen by the naked eye, which are discovered by that instrument.

Animal Manures, all dead animal matters, as fish, bone, horn. *Vegeto-animal Manures*, stable and yard dung, partaking of vegetable and animal matters.

Antiseptic, a term applied to those substances which check or resist putrefaction, as salt, &c.

Arable, fit for ploughing, or tillage.

Arboriculture, or planting, is the cultivation of useful trees and shrubs; rural embellishment.

Arable Husbandry, when the raising of grain is the main object of the cultivator.

Assimilation, in animal and vegetable economy, the hidden process by which animals and plants are enabled to convert matters for which they have an affinity, into their own substance and nature.

Argillaceous, of the nature of clay.

Azote, or *Nitrogen*, an invisible aeriform substance, or gas, which composes four fifths of the atmosphere, and is a constituent part of nitric acid, ammonia, &c.

Biennial, happening in, or lasting, two years.

Biennial plants, such as flower and seed the second year, and then die; as the cabbage, carrot, onion.

Bulb, a round bud, or root, under ground, like the onion, lily, &c.

Bulbous, producing or containing bulbs: growing from bulbs, as the onion, lily, &c.

Calcareous, consisting of lime, or partaking of the nature of lime.

Calcareous soils, such as will effervesce with acids; showing the presence of lime.

Cereal grains, those raised for bread-corn; as wheat, &c.

Corn, in Europe, the general term for all grain convertible into bread; in the U. States, the term is particularly applied to maize.

Cotyledons, seed-lobes, or the two halves which separate in the act of sprouting.

Culinary vegetables, such as are raised for the table.

Caloric, the chemical term for the matter of heat.

Caloric, (free,) radiant heat, or that which is not in chemical union with other bodies.

Caloric, (latent,) the matter of heat in a state of combination; not perceptible.

Capillary, fine, hair like.

Capillary attraction, the force by which fluids are drawn into minute tubes, or cavities, as oil in the wick of the lamp.

Carbon, the base of diamond and of charcoal.

Carbonate of lime, the compound of carbonic acid and lime, under the names of marble, limestone, calcareous spar, chalk, &c.

Carbonate of potash, common potash; pearl-ash; salt of tartar.

Carbonic acid, carbon combined with oxygen.

Cereal, relating to corn. Cereal plants are the several kinds of grain.

Composts, mixtures of various earthy and vegetable materials, as peat, earth, lime, dung, loam, &c.

Culm, the smooth, jointed stalk of grain and grass.

Culmiferous Crops consist of the grains and the grasses which have smooth, jointed stalks, (culms,) and seed contained in chaffy husks, as wheat, timothy, &c. These have generally fibrous roots.

Deciduous, falling off. Trees, whose leaves fall off in the Autumn, are deciduous; those, which retain their leaves in the Winter, are called persistent, or evergreen.

Decomposition, separation of the constituent principles of compound bodies.

Effervescence, an intense motion, which takes place in certain bodies, caused by the escape of a gaseous substance.

Elaborate, improved by successive endeavors or operations; produced with labor; finished with great diligence.

To *Elaborate* food, to digest it in the stomach, and prepare it to be converted into blood.

Epidermis, the hull, or outer skin; the scarf-skin; the outer bark.

Evaporation, dissipation of fluids, by heat; evaporating fluids into vapor, by heat.

Excrementitious, consisting of matter excreted from the body.

Excretory organs, those organs which have the quality of separating and ejecting superfluous parts

Fahrenheit, the inventor of the thermometer which is in general use in this country. His name is sometimes used for the instrument.

Fallow, unsowed, left to rest after the years of tillage. In *fallow*, at rest.

Fallow crop, a crop changed at every ploughing, substituted for the old practice of leaving the ground at rest.

Fallows, grounds lying at rest, in order that they may recover from an exhausted state.

Fallows, naked, ground ploughed up, and left uncovered.

Fallows, Summer, grounds broken up several times, during the season, and exposed to the heats of Summer.

Fallows, Winter, grounds broken up, and exposed to the frosts of Winter.

Fermentation, a peculiar spontaneous motion, which occurs in vegetable substances, if exposed to proper temperature, under certain circumstances. It is usually divided into the acetous, vinous, saccharine, and putrefactive, stages.

Ferruginous, impregnated with iron.

Ferruginous Soils, those which abound in iron, the presence of which is generally indicated by a red or yellow color, in the soil, and the waters which pass through it.

Fibrous, having, or consisting of, fibres.

Floriculture, that branch of gardening, which has cognizance of flowers, of ornamental shrubs, and forcing and exotic gardening, so far as respects plants of ornament.

Friability of soils, lightness; looseness of texture; permeableness.

Gas, an elastic aerial fluid.

Gaseous, in the form of gas, or partaking of the properties of gas.

Gelatin, a chemical term for animal gelly.

Geological, relating to geology, or to the rocks, and other substances, of which the earth is composed.

Germ, a sprout or shoot; the part which grows and spreads.

Germination, the act of sprouting; the beginning of vegetation in a seed or plant.

Gluten, a vegetable substance allied to gelatin.

Gypsum, sulphate of lime; plaster of Paris.

Haulm, the base of the stalks or stems of all

crops, after the seeds are gathered. The haulm of peas is sometimes called pea ryse.

Herbage plants, clover and other plants cultivated chiefly for the herb, to be used either green or made into hay.

Horticulture is to the garden, what agriculture is to the farm, the application of labor and science to a limited spot, for convenience, for profit or for ornament,—though implying a higher state of cultivation, than is common in agriculture. It includes the cultivation of culinary vegetables and of fruits, and forcing or exotic gardening, as far as respects useful products.

Humus, or *Geine*, the product of organic matter, and the food of plants.

Hydrogen, a light, inflammable gas, of which water is in part composed. It is used to inflate balloons.

Irrigation, conducting water to the surface of grass lands, or applying water, in any way, on the surface.

Inorganic matter, devoid of organs: pure earths.

Insoluble matter, not dissolvable by the waters of the soil.

Latter-math, after-math, or rowen, terms applied to the second crop of grass.

Lay, ley, lea, terms applied to meadow, pasture, or sward.

Leguminous crops, peas, beans, and the like; having a seed-vessel with two valves, in which the seeds are fixed to one side only.

Loam, a species of earth or soil, of different colors; a mixture of sand and clay.

Long Manure, green, or coarse manure, or manure from the stable, of which straw forms a part.

Magnesia, an alkaline earth, which enters into the composition of many rocks, communicating to them a greasy or soapy feeling, and a striped texture, with sometimes a greenish color.

Marl, a species of earth, in which there is more or less lime, mixed with various other ingredients, and which has a very fertilizing effect on the soil.

Mould, organic matter in a finely divided and decomposed state, with a little admixture of earth, as leaf mould, peat mould, &c.

Mineral, any natural substance of a metalic, earthy, or saline nature.

Mineral Manures, such as serve to dissolve the organic matters in the soil, to induce new soluble compounds, or to stimulate the organs of plants, as quicklime, gypsum, ashes, salt, &c.

Neutral Salt, a substance, formed by the union of an acid with some base, as an alkali, an earth, or a metalic oxide, in such proportions as to saturate both the base and the acid.

Nitrate of Potash, saltpetre, nitre.

Nitrates, salts formed by the combination of any base with nitric acid.

Nitric Acid, a strong and powerful acid, composed of nitrogen and oxygen, and usually obtained by distilling nitre and sulphuric acid together.

Organic matters, animal or vegetable matters in a greater or less state of decay.

Oxygen, a simple substance, being one of the component parts of water and of atmospheric air; vital air.

Oxygen Gas, oxygen converted into gas by combining with caloric.

Parasitical plants, those which take root, and grow upon other plants.

Peaty Soils, those of morasses, swamps, &c. To be entitled to this appellation, they should consist, according to Sir Humphrey Davy, of one half vegetable matter.

Pellicle, a thin skin, which forms on the surface of saline and other liquids, when boiled down to a certain strength.

Perennial plant, those that do not generally flower the first year, but die down to the ground, and grow up again the next spring, and so on for a number of years, as rhubarb, horse-radish, &c.

Primitive soils, such as exist in early formations of the globe, and destitute of organic remains.

Perennial, lasting a year; perpetual.

Permeable, capable of penetration or of being penetrated; easily penetrated.

Phosphate, a salt, formed by a combination of phosphoric acid with an earth as lime; an alkali, as soda; or a metal, as lead.

Phosphate of lime, a combination of phosphoric acid and lime.

Phosphate of magnesia, a combination of phosphoric acid and magnesia.

Phosphoric acid, an acid, formed by the combination of phosphorus and oxygen.

Phosphorus, a simple combustible body, usually obtained from animal bones. It is of a soft, waxy consistence, and is luminous in the air, at common temperatures. At a heat of one hundred and forty-eight degrees, it takes fire, and burns with great rapidity; and, on this account, is generally kept under water. It is used in some kinds of apparatus for procuring light.

Physical, relating to Nature or natural productions, or to material things as opposed to things moral, or imaginary; external, perceptive to the senses.

Physical science, natural philosophy.

Porous, full of pores.

Potash, a fixed alkali, extracted from burning vegetables, and used in making soap and glass, and in dyeing and bleaching.

Pulverization, breaking up into small portions; reducing to powder.

Pyroligneous, or *pyrolignic, acid*, an acid obtained from wood, by distillation.

Radicles, horizontal roots of plants: those parts of the seeds of a plant, which, on its vegetation, become its roots.

Sal, a salt.

Saline soils, those which become impregnated with marine or common salt, by being flooded with sea-water, or from other causes.

Salts, compounds, produced by the combination of acids with metallic oxides, or earthy or alkaline bases.

Saturation, the act of impregnating a fluid, with another substance, till no more of it can be received or imbibed.

Scarify, to tear apart, with a harrow or scarifier, the surface of grass lands.

Silex, or *Silica*, the earth of which the flint or quartz is composed. It enters into the composition of many minerals, and communicates to them a great degree of hardness. Rock crystal is nearly pure silex.

Silicious, containing silica.

Silicious earths, natural substances, which are composed chiefly of silica; as quartz, flint, sand, &c.

Simple substances, synominous with elements; not divisible.

Soluble, capable of dissolution or separation of parts; as sugar is soluble in water.

Spongioles, the extreme points, or mouths of roots; chyle or sap carrying vessels.

Staple, a principal commodity or production of a country; the particular substance or original quality of a soil.

Stook, a shock of corn, containing 12 sheaves.

Strata, the plural of stratum, beds or layers of earth, or other substances.

Stratum, a bed, or layer, naturally or artificially formed, distinct from the adjacent matter.

Sub, a Latin prefix, signifying under or below.

Sub-soil, the soil lying directly under the vegetable soil which lies on the surface.

Sulphates, or *Sulphats*, salts formed by the combination of any base with sulphuric acid.

Sulphate of copper, blue vitriol; blue stone.

Sulphate of iron, copperas; green vitriol.

Sulphate of lime, gypsum.

Sulphate of soda, Glauber's salts.

Sulphate of zinc, white vitriol.

Sulphate of potash, a chemical salt, composed of sulphuric acid and potash. *Sulphuret of potash*, sulphur and potash fused together.

Sulphate of magnesia, Epsom salts.

Sulphuric acid, oil of vitrol; vitriolic acid.

Sulphurets, combination of alkaline earths or metals, with sulphur.

Tartaric acid, the acid found in the grape.

Thermometer, an instrument to show the relative heat of bodies and of the atmosphere.

Tiller, to branch out into numerous shoots; to send forth numerous stems from the roots; (applied to culmiferous plants only.)

Tilth, the state of being tilled or prepared, for receiving seed; the degree or depth of soil turned by the plow or spade; that available soil on the earth's surface, into which the roots of crops strike.

Trenching, a mode of pulverizing and mixing the soil, or of pulverizing and changing its surface to a greater depth than can be done by the spade alone. In this operation, a trench is formed, like the furrow in digging, but two or three times as wide and deep.

Trench plowing, running a second furrow directly in the bottom of the first.

Tussocks, or *tussucs*, tufts, clumps, tumps, bunches, or minute hillocks, of growing grass.

Urette, liquid manure; the urine of animals; compost manure, made of stale urine and loam.

Vacuum, a space unoccupied by matter.

Vegetable Manures, vegetable matters which have not undergone the process of animal mastication, as green crops, straw, &c.

White crops, grain crops, such as wheat, oats, &c.

"Some person, who had nothing else to do, has ascertained that there are 550,000 grains in a bushel of wheat."

If this counting is correct, it would take less than six quarts of wheat to seed an acre of land, the kernels being eight inches apart each way.

Depth of Plowing.

If it should now be asked, what depth should be given to the plowing, the variety of opinions which exist with regard to this point entangle us in a labyrinth of discussion, through whhich we vainly endeavor to thread our way. There is a very great difference between plowing a soil deeply, the vegetable layer of which is not only homogeneous to a considerable depth, but is also equally fertile throughout the whole of that depth, and augmenting a more or less superficial layer of earth by means of deeper plowings, or, in other words, rendering its constituent parts homogeneous to a greater thickness, and impregnating them with fertilizing particles throughout their whole extent.

Every attentive observer must admit the manifest superiority of deep over shallow soils. The depth to which the roots of plants will penetrate when they meet with a fertile soil, varies according to the nature of these plants. There are some, the roots of which have been traced to the depth of fifteen, twenty, and even thirty feet; as for example sainfoin and lucerne. Red clover will push its roots to a depth of nearly three feet; and several other plants of common growth probably penetrate even to a greater depth, when, instead of encountering obstacles, they meet with a loose, fertile soil. I have pulled carrots two feet and a half in length, the tap-root of which was probably another foot long. But as land is chiefly devoted to the cultivation of various kinds of grain, its value ceases to increase beyond the depth attained by the roots of cereals; at least to a similar extent.

The unassisted eye will frequently enable us to trace the roots of corn [grain] to a depth of eight inches; and, with the aid of a magnifying glass, we can distinctly see that these roots have been broken off, and some portion of them still left in the ground. I have myself seen corn grown on the shoulders of the ridges, where the influence of the atmosphere is sufficiently powerful to encourage their growth: they would never have penetrated so far on a flat soil, even had it been equally rich. The seed, when sown, is usually placed about two inches below the surface of the soil; consequently, the roots which we can see are six inches long, and it is more than probable that the fine extremities of their fibres extend to a depth of at least twelve inches. Hence it appears that we may consider twelve inches to be the proper average depth for a soil adapted to corn, and admit it as a principle, that the plants penetrate thus far where they find the earth sufficiently loose and friable. Where the plants are sown very closely to each other, their roots are still more disposed to penetrate into the ground. Wherever we have the opportunity of observing, we shall see that the roots avoid each other, and put forth their largest shoots in those places where they will not interfere with others: this is most perceptible in plants growing in water, because we have more opportunity of observing the roots there. When, therefore, a plant is prevented by those around it from extending its roots in a lateral direction, it pushes them downward, provided that instead of encountering obstacles, it meets with a loose soil well impregnated with nutritive matter. But if, on the contrary, the root encounters a hard or

sterile substance, it extends itself on all sides, and, in this case, when the plants are very close together, their roots form a thick and knotty tissue, dispute with each other for room and nutriment, the weakest give way before those which possess most vigor, and, however advanced in their vegetation, are weakened or latterly perish. The deeper a soil is, the nearer together can plants be made to grow in it without injuring each other, and the greater number of them will attain to perfection. No attentive observer can avoid remarking the wide difference which exists between deep and shallow soils. It appears in proportionate degrees in soils of four, six, eight, or twelve inches in depth; provided that such soils are equally impregnated with humus throughout their whole extent. If it were possible to conceive that each grain of corn bears a plant, we ought to be able to sow land having a layer of vegetable soil eight inches in thickness twice as closely as we could one which had only four inches depth, and obtain a double crop from it. In this manner the value of the soil would be determined by a multiplication of its surface by its depth.

But we must not, however, venture to carry out this principle to its fullest extent, because the influences of the atmosphere always give to extent of surface an advantage over depth: in fact, if we take a cubic foot of earth, and divide it into a space of two square feet, the latter will always bear a greater number of plants than could possibly grow on the former. No impartial observer who has had any experience in this matter, will, however, venture to dispute the fact that depth of land has a great influence over its value. In order not to exceed the bounds of truth, I shall lay it down as a principle that this value is increased eight per cent. by every additional inch of depth which the soil acquires from six to ten inches, and diminished in equal proportion from six to three inches.

But deep soils have likewise another advantage: they suffer much less from drouth and from moisture than those in which the layer of vegetable earth is more shallow. When the weather is wet, and a great deal of rain falls, the water sinks into a loose soil, impregnated with humus as low as the vegetable layer extends. Such a soil absorbs a quantity of moisture proportionate to its depth before it suffers any to return to the surface. This is the reason why garden ground, which is well tilled with spade labor, never suffers from excess of humidity even when the surface of shallower soils would be drenched with moisture; so long as the water does not ebb back to the surface of the soil, it does little or no harm to the plants. Deep lands retain the moisture which they have absorbed for a considerable period, and communicate it to the surface when that becomes parched and dried up. Nor is this advantage confined to the extent to which the roots of the plants reach: I am well convinced of this from having noticed that during a long period of dry weather, a crop of cereals, growing on land that had some years before been dug up to a depth of three feet, suffered much less than another which grew on a soil only a foot and a half deep, although both of these soils had received exactly the same amount of cultivation and preparation.

Nor is this all: crops of grain growing on deep soils suffer much less from sudden changes of temperature, from drouth, or from heat; because their roots, being able to penetrate farther, are less subject to the action of these influences than they would be if nearer to the surface. During excessively hot or very dry weather, it is evident that the plants are much fresher in deep than in shallow soils; in fact, they invariably perish inthe latter.

Lastly, it has been every where remarked that corn [grain] growing on deep soils is much less liable to be laid even when very luxuriant in vegitation; this is, doubtless, owing to the great degree of strength which the depth of the roots gives to the lower part of the stalk, a strength which corn growing on shallow soils can never attain, because then the fresh shoots put forth by plants growing closely together cannot find sufficient nutriment to enable them to attain their full vigor. Nor is it to cereals alone that this depth of soil is beneficial; it is not less favorable to the cultivation of plants the roots of which penetrate deeper into the soil, and seek their nourishment beyond the level occupied by the roots of corn.—This is the reason why a deeper soil than is absolutely necessary for the cultivation of cereals is desirable, although the value added by this increase of depth does not increase so rapidly as in the layer which suffices for the roots of corn.

But if we would have a soil attain all these advantages, and permanently possess them, it is requisite that from time to time it should be plowed to the very bottom of its vegetable layer, turned over, loosened, and every part submitted to the vivifying and beneficial action of the atmosphere. Unless this is done, it will, if merely superficially plowed, generally lose all those advantages of which we have been speaking; a hard crust or *pan* will be formed immediately beneath the sphere of the plow's action, which cuts off the earth beneath it from all communication with the air and with the layer of vegetable mould. Experience has convinced me that it is not necessary that this deep plowing should take place every year, but only that it should be repeated once in every six or seven years, especially if during the interval the depth of the plowings given to it are varied, for nothing contributes so materially to form the crust of which we have spoken as repeated plowings of equal depth. It appears that the alternate cultivation of cereals and of plants, the tuberculous roots of which penetrate farther than the others, likewise contributes toward the loosening of the inferior layer of the soil, and maintaining its communication with the upper and superior layer.

Land ought, therefore, to be plowed every seven years to the very bottom of its layer of vegetable soil; and the intervening plowings may be more or less superficial, and varied in their depth according to the purpose for which they are bestowed.

In by far the greater number of cases in which it is deemed advisable to deepen the layer of vegetable earth, it is best to do it gradually. By the expression "deepening the layer of vegetable soil," we mean the bringing to the surface such a quantity of virgin earth as can be intimately combined with the vegetable soil, and enter into combination with it. By this means the previously existing vegetable layer is not totally buried or

rendered inert, and that absorption of substances from the atmosphere which always takes place in newly turned soil becomes more easily effected.

It has not yet been distinctly specified what is to be understood by the terms "deep plowings," "superficial plowings," or "plowings of a moderate depth." In order, therefore, to be able to attach some definite meaning to them, we will suppose a superficial plowing to be only from two to four inches in depth; a moderate plowing, one in which the instrument penetrates from four to seven inches; and a deep plowing, one in which the soil is turned up to from eight to twelve inches below the surface. All plowings deeper than this are designated double or extra plowings; because it is scarcely practicable to turn up land which has not previously been tilled, beyond the depth of twelve inches with a common plow. I cannot form the least idea of those plowings which are said to be carried to a depth of from eighteen to four and twenty inches.

REMARKS.—The importance of the principle so ably set forth in the foregoing extract from the celebrated German agriculturist, must excuse its length. It only remains to consider whether there be any thing in the character of our soils which would make these principles inapplicable here. If the subsoil contains properties, (as it does in some districts,) which are deleterious to vegetation, or is of such a texture as not to intermix advantageously with the surface soil, as when, for example, it is a hard pan of tenacious clay, deep plowing will be disadvantageous. Again, if the surface soil is underlaid by a stratum of loose sand, destitute of vegetable mould, it would be better, after cultivating to a moderate depth, to go no deeper, in order that repeated plowing of the same depth, may form a crust under the cultivated soil, to prevent the waste of fertility by leaching.

But these objections apply to but a limited portion of the soils of Michigan. The sub-soil is generally an excellent mixture of ingredients, neither too heavy nor too light; not abounding in vegetable mould, certainly, to the same extent as the surface soil, but requiring only exposure to the air, for a sufficient time, and cultivation, to bear good crops. Soil thrown up from the bottom of cellars, and even of wells 20 or 30 feet in depth has been found, after a year's exposure, to grow some vegetables in great perfection.

In much of the state, a hard pan of reddish clay, mixed with sand and pebbles, lies from one and a half to two feet below the surface, furnishing sufficient security against exhaustion by leaching.—Above this, the soil is in general all good and available with right management, to any depth that we may choose to use it. Such management is believed to be, to deepen it gradually, not more than one or two inches in one season, not to sow a crop on the newly exposed sub-soil, but give it exposure for some time to the influences of the atmosphere, or if this is necessarily done, to apply a top-dressing of plaster, ashes, or lime.

If the peculiarities of the *soil* of Michigan furnish no objection to deep tillage, those of its *climate* present strong reasons in its favor. It is well known that one of the worst evils of the climate, is its liability to drouth. In such seasons, the soil of shallow cultivation quickly parts with its store of moisture, leaving the vegetables which it nourishes, parched and stinted. The great remedy for this defect of climate, as demonstrated by Von Thaer, is *deep tillage*.

We have dwelt upon this subject, because we deem it one of much moment. But if any one doubts the expediency of deepening his tillage, or is at a loss to know how much he shall do so, let him trust to nothing but his own experience.—The experiment can be easily and satisfactorily tried on a few square rods of ground. We invite farmers to make the trial, and furnish us with the result, in detail, as soon as ascertained, premising, however, that the full benefits of deep culture are not commonly experienced the first year, and that probably the most favorable circumstances for commencing it, are in plowing under a clover lay or long manure, or at the first plowing of a summer fallow. ED. FARMER.

For the Michigan Farmer.

How to stop a Runaway Horse.

MR. EDITOR:—I find an article in the N. Y. Sun, on horsemanship, which I think may be useful to some of your readers: "When your horse runs away with you, have the presence of mind to catch hold of his mane, wind your bridle round his neck and pull upon it; it will have the immediate effect of stopping his career, however headlong his career may be. Or if the bridle is not long enough clasp your arms around his neck, and with your hands clench his windpipe; by doing this you will effectually stop him, the moment his respiration is checked. Persons having but a small proportion of presence of mind could thus save their own or a fellow creature's life."

This, sir, reminds me that I once knew a man, his father, wife and mother, to be sadly injured by a horse (before a waggon) running away in spite of the efforts of a vigorous arm, and notwithstanding that the horse's chin was drawn nearly to his breast. Should a horse become unmanageable in this respect, before a carriage, let a rope be fastened about his neck so as to tighten on being pulled, and let the other end be in the waggon, and if he cannot be stopped by the rein, let the driver pull on the rope, choke the horse, and he *must* stop. Truly yours, N. H.

Novi, Oakland Co., January 28th.

Sprinkle 2 qts. of brine around each plum tree as far as the roots extend.

For the Michigan Farmer.

Cheese.

It is difficult to give intelligible written directions on this subject, as success depends so much on experience that it requires practical teaching; but when this is not to be had, we must make up by care and observation in practice, what is necessarily deficient in theory. To make the cheese of a small dairy—say eight or ten cows, which would produce seven pails of milk per day, which if properly managed would make twenty lbs. of cheese, I give the following rules; one point being constantly observed,—that is temperature: as too much heat not only affects the quality, making it hard and poor, but diminishes the quantity. The milk when set for curd, should be at 90 degrees, or about two degrees below milk heat. The rennet is then added, two or three spoonsful to seven pails of milk. The exact quantity can only be ascertained by trying its strength. If the proper measure has been used the curd will be fit to break up in one hour from the time it was set; which may be done with a long handled skimmer or curd breaker. This must be done very gently to avoid bruising the curd, and losing the cream. It is then left one half hour to settle, a pail-full of the whey is then made milk warm, and returned to the curd gradually, all the time breaking it up. Another pail full of whey is now made two degrees above milk heat, and most of the whey remaining on the curd, let into another vessel, left cold. The warm whey is then returned to the curd, breaking it up as fine as peas. It should be now one degree above milk heat: if it is not, heat more whey and put on. It is then left fifteen minutes, the strainer is then spread in the cheese-basket, the whole mass put into it, breaking it up as the whey drains out. A pail of cold whey is then put on to cool it. After being sufficiently drained, it is returned to the cheese-tub and salted, one gill of salt to 16 lbs., then put into the hoop and pressed with about half of the proper weight put on, till near night, it is then turned, the whole weight put on, and pressed until next day, when done.

If you wish to make a double curded cheese, make the second curd in the same way as the first. When it is ready to go to the press, take the first curd, (now a cheese,) out of the press, but not out of the hoop, cut and scratch over the upper surface, making it rough, that the second curd may adhere firmly to it. It is then put into the hoop, with the other, pressed until near night, when it is turned into another strainer, and pressed till the next cheese is ready for the press, when it is taken out and rubbed with lard, a bandage sewed on it and turned, and rubbed every day.

Another way of making a double curded cheese is, to make the first curd *without* warm whey, merely cutting it up in the basket and letting the whey drain out, kept till next day, when it is cut into small pieces, warm whey put on it until it is a little more than milk warm, then drained and chopped; the second curd made according to the *first* rule, is mixed with it, salted, and put to press.

A Dairy-woman of Herkimer Co.
Fairfield N. Y. Feb. 1846.

Keep your team in good heart.

Care of Cows with Calf.

Cows that are expected to calve early, must have more attention than others. It is barbarous to tie a cow to a stanchion near the time of calving.

After calving warm drink may be given in any quantity; but you should be cautious at such times not to feed so high as to cloy the appetite, or create a fever. Warm swill will be drank by cows that have been early taught to drink it. A quart of meal may be stirred in, for one cow, and many cows will drink warm water with meal in it, when they would not drink swill.

We have generally thrown some hot embers into a pail of water, at such times, and cows will drink it, for they are then very willing to drink what they would not at other times, or when they have access to pure water. Many cows, at such times, will drink their own milk as soon as it is drawn from the udder; and this is always good for them. The calf will not want it all, and he should be kept so short that he will worry the udder and draw out every drop of the milk.

On Rearing Calves.—Various practices prevail in different places, in nursing calves intended to be kept for stock. Far in the interior, where keeping and milk are cheap, some farmers suffer calves to run in the pasture with their mothers, and suck during the summer. Some let them suck for three months, and then take them off and let them pick for themselves.

Some farmers take them away from the mother immediately, and feed them on milk which they are taught to drink from a pail, or trough. We have known some to fatten their calves for the butcher by hand feeding. But labor must be cheap and milk dear to make this practice profitable.

There can be no doubt that milk sucked from the cow, is better food for the youngling than any that can be furnished. The calf draws it gradually; it physics him just enough, in ordinary cases; and it is just warm enough for his stomach. When calves drink milk from a pail they swallow too rapidly and the system is disordered. It is physiced too much, or not enough; it is not so agreeable to nature, a departure from whose laws must be practiced with caution.

Yet, when strict attention is paid to imitate nature, we have seen good animals that were reared by hand. And when grain is cheap, compared with milk, stock can be reared cheaper on the skimmed milk, meal, and roots, than on the natural food that is furnished by the mother. * * *

After all, if you would raise first rate stock of good size, you should let your calves suck for a number of months in the natural way. They will then be less subject to the scours and other complaints than when they are fed with artificial food. And you will often make cows of your heifers one year sooner than you otherwise would; for they will be large enough to bring calves when they are but little over two years of age.

Your steers too will have finer forms as well as a more rapid growth, for if you are not very attentive, when you rear by artificial means, your young cattle will be ill-shapen, pot bellied, and poor.—*Mass. Plowman.*

Horticultural Department.

For the Michigan Farmer.

Mr. Hurlbut—By permission, I propose to furnish for publication in the Farmer, monthly contributions to your horticultural department, giving instructions for the management of gardens, I shall invariably recommend the course I pursue in the preparation of the seed, planting, and general mode of cultivation of garden vegetables. Not that my *modus operandi* is the best, or that it cannot be improved upon: but from several years experience I have found it to answer well, and if carefully followed, confidently believe will give very general satisfaction. The instructions will be intended to apply to those gardens where the main object is to raise a supply of vegetables for family use and not to field culture. In no way, with the same expense, can so many of the comforts as well as the luxuries of life, be procured, as may be from a well managed garden. Owing to difference of location, variation of soil, and adverse circumstances beyond the control even of the experienced gardener, some alterations may be advisable, and perhaps absolutely necessary to ensure success. Before commencing with the calendar, a few general observations may not be amiss, and those which are applicable under almost all circumstances.

The Soil. The soil of every garden, if not now so, should be made rich and mellow. Such as has too much clay, should have sand or sandy loam added, and such as are too sandy, should have clay loam and marsh muck added: and in both cases give a supply of well rotted manure, thoroughly mixed by plowing or spading *deep*. Well rotted marsh muck may be used freely with advantage on any soil.

Implements for use. Every gardener should furnish for use a spade, rake, common hoe, narrow hoe, line, roller, and a trowel for transplanting; and it will pay the expense to procure and keep for use, a quarter bunch of shingles, to shade plants after transplanting. A cheap rake may be made of thirty or forty penny cut nails; and in the absence of the roller, the common hoe or a board may be used for pressing gently the earth or seeds just planted.

Selection of Seeds. If seeds of your growing are to be used, select such as *first get ripe*.—If you depend on purchasing seeds, procure those put up by experienced gardeners, who depend on success in their business, by offering no seeds but such as are genuine as to quality and variety. I make it an invariable rule to sow or offer for sale none unless grown by myself or some experienced gardener, without first proving them.

Time of sowing. As it is always best to plant seeds when the soil is in proper condition, and the air of proper temperature, but little reference, if any, should be had to the particular phases of the *moon*. More depends upon the soil being in a proper condition, than upon any precise day; therefore a variation of several days is often necessary.

Manner of Sowing. All seeds should be covered in depth proportioned to the size of the seeds, having reference to the moistness of the soil: if wet, cover less, if quite warm and dry, cover deeper. Small seeds, such as celery, &c., should be covered slightly, and protected from the scorching rays of the sun by sticking a shingle slanting on the south side, to protect them from the sun, and at the same time admit a free circulation of air. I am not friendly to the plan recommended by many, of soaking seeds. There may be circumstances when it may be beneficial; but generally, I think it proves injurious. By wetting seeds, and rolling them in plaster or ashes, and adding a quantity of soil, they may be sown with more expedition, and more even and thin.—But the idea of soaking seeds until they sprout, must be wrong with few exceptions. In sowing or planting seeds, put in a good supply, for it is certainly easier and more sure to thin out, than to be under the necessity of planting or sowing a second time, and running the risk of the loss of a crop. The most economical plan is, to sow long rows of the different kinds of vegetables, selecting the place for those that are to remain in the ground through the winter, when they will be the least injured. The usual plan of making raised beds I discard wholly, or only admit it on a soil very wet. Much labor is saved by sowing long rows; the surface is left even, and the rains do more good.

CALENDAR FOR APRIL.

Kitchen Garden. As soon as the ground can be worked in this month, plant peas in drills, covering them about two inches. Plant a few potatoes of the early kinds. Sow onions for main crop, parsnip, vegetable oyster, spinach, lettuce, beets, parsley and carrots. Asparagus, should be sown where it can remain unmolested two years. If the weather be favorable, from the 15th to 20th, sow for early use, cabbage, cauliflower, radish, and tomatoes. Tomatoes, being very tender, must be protected in cold, chilly weather, and from frosts. The last of the month, cellery may be sown, and a few bush beans and a little corn, planted. Sow lettuce and radish between the rows of onions, parsnips and oysters, for they will be grown and pulled for use, before the other roots want the ground.

Prepare the ground for the main crops to be sown in May, by manuring, plowing or spading deep, mixing the subsoil well with the soil. A *little salt, lime, ashes* and marsh muck, in any quantity, mixed with manure, makes a good compost for gardens. Asparagus beds should be covered with a coat of well rotted manure, and mixed with the soil with a fork or a narrow hoe. Set out small onions for pulling early.

Flower Garden. From the middle to the last of the month, sow the hardy kinds of annual flower seeds, such as coreopsis, asters, larkspurs, poppies, catchflies, marigolds, primroses, mignonettes and others. No seeds of tender plants should be sown till the soil becomes warm, say the middle of May.

Biennial and perennial flowering plants from seeds sown last year, may be transplanted, and old established plants arranged according to taste. After transplanting, if the weather be dry and warm, shade for a few days, and water. Tulips, hyacinths and other bulbs will show themselves and will need care. Tie the blossom stems to

neat little rods.

Dahlias should now be potted off, and placed in a warm room, or in the open air, when mild weather begins, and kept from frosts and watered freely, when early blossoms are desired; when that is not the object, keep the bulbs until next month, and then plant them in the garden. By placing the bulbs in pots or boxes, they will be from eight to twelve inches high by the first week in May, which is as early as they should be planted in the open air.

Ornamental Shrubbery, Should now be attended to. Transplant to fill up vacancies; the dwarfish kinds next the road, and the taller ones nearer the house. Fill the yard full. Prune off decayed branches, dig the soil well around the trees and shrubs, adding fine manure and marsh muck. Many trees and shrubs that are indigenous, look well with foreign varieties, and add to the beauty of the scenery. Procure Scotch roses if you have them not; they are very fragrant and of mixed colors, and add much to the beauty of the garden or yard.

Fruit Yards, If not done should now be filled with choice varieties of fruit. Put old tan bark or chip manure around the trees, currants, gooseberries and grapes; prune out old and decaying branches of the bushes and trees. Grape vines should be carefully trained to trellises, but never pruned at this season of the year. Strawberry plantations may be made this month with good success. Do not neglect the raspberries, particularly the English varieties, and the Antwerps, with our native blacks. Wash fruit trees the last of the month with weak lye. Keep the earth loose around the trees, and it will add much to their growth. Peaches and cherries are mostly destroyed. It is therefore best to attend strictly to the smaller fruits, and make new plantations of them.

Green House Plants, Should be placed occasionally in the open air, when the weather is mild. If infested with insects, a fumigation of tobacco will destroy them. Those that are overgrown or broken, may be headed down, and you may expect a fine growth, if properly attended to.

S. B. NOBLE.

Ann Arbor Garden, April 1, 1846.

Horticultural Society in Detroit.—At a meeting in Detroit, on the evening of the 5th ult. a few gentlemen of that city formed themselves into a horticultural society, adopting the following preamble and resolutions:

"Preamble.—The benefits which have been derived from Horticultural Societies, wherever they have been established and properly conducted by the practical man, as well as the amateur and community in general, cannot for a moment be brought in question. Their action upon the science of Horticulture, by bringing together and exhibiting the various results of various practices, has not been less apparent, than their influence upon mental culture and enterprise.

Therefore, being desirous of following the laudable example of other States and cities, and convinced that the formation of a Horticultural Society in Detroit, will be conducive to mutual improvement, and add to the interest of said city; we, whose names are hereunto affixed, declare ourselves formed into an association of the above character, and appeal to the citizens of Detroit for that support which such associations deserv and require."

Indian Corn for fodder.—Mr. Bartlett, on the east shore of Seneca Lake, in the town of Romulus, planted an acre of corn for fodder, 18 inches a part one way, 12 the other, three kernels to the hill. He got five tons of well cured edible stalks, and fifty-four bushels of ears from the acre; the land was never manured; it was a clay loam interspersed with granitic boulders and quartz and limestone pebbles.

5 tons stalks worth this year $7 per ton, -	$35.00
54 bush. ears of 8 rowed corn, at 25 cts., -	13.50
	$48.50
Deduct cost 1 bushel seed, planting, hoeing, cutting up, husking, stacking stalks and use of land,	17.44
Nett profit, - - - - -	$31.06

Mr. B. also grew 40 bushels good spring wheat of the Labrador variety to the acre this season; it was sown in March as soon as the frost was out of the ground. S. W.

Waterloo, Seneca Co., N. Y., Dec. 1845.

—*Albany Cult.*

Root Culture.—Extract from a letter from S. B. Burchard, Esq., of Hamilton, Madison Co., N. Y., to the Editor of the Cultivator.—"I am a thorough convert to the root crop, especially the carrot. From the little experience I have had, I am fully convinced that I can winter forty cows on four acres of carrots, with one-fourth of the hay, with the use of straw, which I used to throw into the barn-yard, in better condition than formerly, with the full amount of hay and three bushels of grain to each cow. I think that green-sward is preferable to fallow land. 1st. The expense of tilling and keeping weeds from injuring the plants, is much less, as, by plowing the sward deep, the weeds do not start. 2d. The sod will soon rot, and afford the proper nutriment for the plants. My present calculation is to plant four acres to beets and carrots the next season."—*Albany Cult.*

Lice on Cattle.—1. Mercurial ointment rubbed on the animal from the crown of the head to the root of the tail, down the back-bone, will effectually kill lice in a day or two. This, however, is a dangerous remedy to use, unless the animal is kept in the stable, and requires great care to preserve him from the effects of cold and wet.

2. Corrosive sublimate is another effectual remedy. This is to be applied as before prescribed, but, like No. 1, is dangerous.

3. A strong decoction of larkspur is also a sure and safe remedy. This should be applied as recommended for No. 1.

4. Spirits of tupentine is also a sure remedy. It should be applied as No. 1.

5. A decoction of tobacco, applied as No. 1,

6. A mixture of soft soap and Scotch snuff, well rubbed on the parts, will also eradicate them.

As an auxiliary to whatever remedy may be used, the currycomb and brush should be freely applied, after a day or two, in order that the hide and hair of the animal may be kept clean. No animal which is well fed, and daily curried and brushed, wil either breed or retain lice; the latter operation, however, few who have much stock can regularly attend to.

From the Farmers' Library.

Preparation of Seed Corn.

* * * * * *

My corn crop was increased about 33 per cent, by a simple preparation of the seed as follows:

At noon of the day before planting, 18th May, I put my seed-corn to soak in a strong decoction of copperas water, say 2 lbs. copperas to warm soft water sufficient to cover a bushel of corn. The next morning took out a peck, added a pint or more of soft soap, stirred it thoroughly, then put on plaster enough to make it convenient for planting, say one quart. The whole field was planted with the seed thus prepared, except 4 rows, which were planted with the seed without any preparation The afterculture of the whole was alike—passing through each way with the cultivator, and hoeing twice. The four rows last mentioned were cut up, harvested, and the corn weighed and measured by itself; also four rows next adjoining, the seed of which had been prepared as above. The produce of the four rows of unprepared seed was eleven bushels and a half. The product of the four rows from the prepared seed was seventeen bushels —a difference of five and a half bushels of ears in one hundred and twenty hills. The yield of the remainder of the field averaged fully equal to the four rows measured.

The difference in the growth and appearance of the corn of the prepared and unprepared seed was striking from the time of its appearance above the ground until it tasselled —the former looking green and vigorous, the latter puny and yellow. It was all cut down by the frost when about three inches high, but came on finely after the first of June. There was scarcely a soft ear in the field, excepting on the four rows of unprepared seed. These were about a week later in ripening than that from the prepared seed. The soil is a sandy loam. The whole expense of preparing the bushel and three pecks of seed did not exceed 62½ cents. The increased produce of the field by preparing the seed was over 200 bushels ears.

Lansing Wetmore.

For Grubs in Sheep's heads.—Light a pipe, insert the stem a good way up the nostril of the sheep, cover the bowl with a handkerchief, and blow the tobacco smoke vigorously through the stem up each nostril.

MICHIGAN FARMER.

JACKSON, APRIL, 1846.

Spring Crops.

Spring Wheat.—It is a fact not generally understood that there is more nutriment in spring than winter wheat. This is inferred from the greater proportion of gluten, or half animalized matter, contained in the former. The following is the analysis of Sir Humphrey Davy:

	Gluten.	Starch.	Insoluble Matter.
100 parts of the best Silesian wheat contained.	21	75	4
100 parts of Spring wheat,	24	70	6
100 parts of good English (winter) wheat.	19	77	4

The chief requisites for this crop are, that the gronnd be clean by previous culture, and that it be sown as early as the soil is in a fit condition to work. If the sowing be deferred, the liability to rust is increased. The quantity of seed generally preferred is 1½ bushels to the acre.

The favorite varieties at present are the Black Sea, the Siberian, the Tea, and Italian.

Barley.—This grain is not a favorite with many farmers. It has sometimes, especially in very dry seasons, turned out, with them, to a great extent a failure, the stalks scarcely growing high enough for the operation of the scythe, and the heads nearly corresponding. Yet, when successfuly cultivated, it is a profitable crop. When the following conditions exist, namely, ground manured, planted and kept clean the previous year, well plowed and completely pulverized, and sown before the 25th of April, (but not when the ground is wet,) there would probably be little danger of failure, whatever be the character of the season. But it is not a good crop for stubble ground. Its yield, under favorable circumstances, is from 30 to 40 bushels to the acre—its price in the market, about the same as corn —sometimes more. As a crop, its advantages are, moderate exhaustion of the soil, early ripening, which adapts it to be succeeded by wheat, the excellent character of the straw for fodder, superior to that of any other grain, and its adaptation to seeding down. Ground barley is an excellent feed for fattening hogs, coming in the interval between the gleanings of the wheat stubble, and the ripening of corn. Seed from 6 to 8 pecks to the acre. The use of the roller, after the grain is up two or three inches, is recommended. The American gardener contains the following experiment in the culture of this grain: "The last spring being remarkably dry, I soaked my seed in the black water taken from a reservoir, which constantly receives the draining of my dung

heap and stables. As the light grains floated on the top, I skimmed them off, and let the rest stand 24 hours. On taking it from the water, I mixed the grain with a sufficient quantity of sifted wood ashes, to make it spread regularly, and sowed three fields with it. The produce was sixty bushels per acre. I sowed some other fields with the same seed dry; but the crop, like those of my neighbors, was very poor, not more than 20 bushels per acre, and much mixed with green grain and weeds when harvested. I also sowed some of my seed dry on one ridge in each of my former fields, but the produce was very poor in comparison of the other parts of the field."

Oats.—The soil required for oats is one that is rich in vegetable manures. "Recently drained marshes, and peaty soils after being dressed with lime, yield large crops of oats." [Johnson.] As the crop is an exhausting one, the soil, unless very rich, should be afterwards manured, or laid down to grass. Clay soils should be plowed the fall previous, and in all cases, it is safer to prepare the ground and sow early in the spring, although in occasional seasons, late sown crops have done best.—Quantity of seed to the acre usually, from 1½ to 2½ bushels, although it is said that all the great crops have been raised from 3 bushels sowing and upwards. If grass seed is sown with the crop, thin sowing is advisable on that account.

The Polish oats is one of the best varieties.

Peas.—Owing, perhaps, to the heat and dryness of the climate, and the sandy soil, peas do not seem well adapted to a large portion of this state. In England, a sandy soil is preferred for this crop, but the climate is very different from ours. Wherever they succeed, they are highly advantageous, as furnishing a large amount of the richest food, and leaving the soil, without material exhaustion, in excellent condition for a crop of wheat. It is recommended, after sowing, first to harrow the ground one way, and then to plow in with a light furrow. The harrowing prevents the peas rolling together as the plow advances, while the plow gives the requisite depth of covering. No stable manures should be applied to this crop. If the seed is buggy, a writer in the N. E. Farmer recommends scalding the peas a quarter of a minute in boiling water, spreading them about, and sowing without delay. The Cultivator says, scald two minutes, then mix with them, dry ashes, plaster, or air slacked lime. Seed from 3 to 4 bushels to the acre. They cannot be got in too early.

Sowing Clover Seed.—Some farmers pursue the eastern practice of sowing on winter wheat in the spring. Observation and experience have convinced us that this is unsafe and inexpedient; certainly on the dryer soils. Better sow with some spring crop or with early sown wheat in the fall. If the winter wheat however, is not too forward to admit of spring harrowing, it may probably answer, if that course is pursued. But the seed should at all events be harrowed in, to enable the plants to withstand the summer drouths. The best crops for seeding down with are barley and spring wheat. Another eastern practice followed here, as it appears to us, without due regard to local differences, is, the mixing of herd's grass with clover, on light, sandy, or loamy soils. The herd's grass impedes the growth of the clover, without itself yielding a good product, and prevents the advantageous conversion of the land to wheat culture, by a single plowing in the fall, as might be done with an unmixed clover lay. If a variety of fodder is desired, the raising of millet as suggested by a correspondent in this number, is believed to be preferable. On timbered land, and all soils with a sufficient admixture of clay, the above remark relative to herd's grass, of course does not apply.

Of clover seed, the quantity per acre 6 qts. of cleaned seed, or ten bushels in the chaff.

If the cleaned seed be soaked a few hours in rain water, and then rolled in plaster, it is said to germinate quicker, and better endure a drouth.

The Potatoe Crop. In addition to the suggestion of a correspondent in our last number, namely, to scatter a half peck of plaster and lime on every barrel of seed potatoes, after being cut ready for planting, may be given one or two other recommendations, which experience has pointed out, as tending to prevent the potatoe rot.

The most efficient yet discovered and at the same time the easiest appears to be early planting. The potatoes then ripen, and get out of danger, before the disease begins. Of potatoes from the same seed and in the same field, planted some in April, and others about the first of June, the former were found perfectly sound, the latter nearly destroyed. This opinion does not rest upon a few isolated cases, but is matter of general remark.

No stable manure should be applied to the potatoe field.

The variety called Neshanocks or Mashonics has shown itself more liable to be affected than any other that is cultivated among us, and consequently its cultivation might be for the present, advantageously abandoned.

The prevalence of rot in this State has not yet been extensive, and perhaps may not be. But there is no harm in using precaution.

Carrots. The culture of carrots has here-

tofore been treated of, and shown by repeated experience to be profitable.

Parsnips are likewise recommended as a field crop, to be used as a spring feed for sheep. Prepare the ground by twice plowing, at an interval of two or three weeks, and sow in drills 18 inches apart, plants 9 inches apart in the drills. Let them remain in the ground through the winter, and when the frost is out in the spring, dig for use. They will produce on good soil from 6 to 800 bushels to the acre, and furnish whole some and nutritious food at a time when it is most needed.

More Specimens of Wool.—An addition to our cabinet has been sent us by Mr. Spafford, of Manchester, taken from five bucks and five ewes. These are mostly Paular Merinos, one year old last spring, when the fleeces of the bucks varied from 5 lbs. 10 oz. to 6 lbs. 2 oz. per head. The last mentioned weight was from a cross of Paular with Negretti.—One from a Spanish Merino buck 6 years old, weight of fleece 8 lbs. 12 oz. Mr. S. says: "I have noticed the banter of Messrs. Barker and Mills to compare sheep with any in the State. I will accept the challenge on the following conditions: We will put up a premium of from one to five dollars a head as they choose, and expose to the public each five bucks, within 20 miles of home, at any time before the 20th of May: the judges to be farmers qualified; the data, the greatest ultimate profit."

We have also received specimens of Merino wool from Mr. Gage of Norvell, and of Saxon from the flock of Mr. Belknap of Henrietta.

Chess and Wheat.—An instance of erroneous observation has been mentioned to us, the like of which may have heretofore led many to an incorrect inference. While engaged in harvest, a farmer observed a head of wheat and chess, apparently growing together on the same stalk. The head of wheat was plump and good, and about midway of its length projected a stem of chess. He scrutinized it closely, not believing in the possibility of transmutation, and pulled upon the chess stem to separate it, if it should turn out to have only become intertwined in its growth; but he could not separate it. He then pulled off, one by one, the little foot stalks which supported the different kernels of wheat, when upon coming to that part of the head from which the chess stalk appeared to issue, he found this—not growing out of, or having any connection with the stalk—but so firmly locked in between the main stem and the foot stalk of a kernel, as to be incapable of separation without breaking.

It would be well if every apparent violation of nature's laws, were subjected to a like rigid scrutiny.

Important Subjects for Experiment.

We beg leave to suggest to those who have leisure and disposition to try experiments, a few subjects of investigation, of especial interest. The time for the trial of the farmer's one annual experiment in the raising of summer crops is at hand, and it is our earnest wish that it may not pass by altogether unimproved. And first in regard to

Rust in Wheat. On much of the lands of this state, rust seldom prevails. But on moist soils, and those abounding in vegetable mould, the promise of a splendid harvest is sometimes blighted by rust. It is believed that there are methods by which this may be prevented—and to attain so desirable a result is surely worth some little trouble.

In some experiments, *charcoal* ground in a bark-mill, has been found perfectly efficacious in protecting the portion of the field to which it was applied from rust, while the rest of the field was nearly ruined by it. The charcoal was sown on the wheat in the spring, at the rate of 50 bushels to the acre. *Who will try it, if only on one square rod of ground?*

A mixture of 2 bushels of salt, 3 of lime or plaster, and 5 of ashes leached or unleached, applied to an acre of wheat in the spring, it is thought would also prevent rust, by tending to produce a hard, bright, flinty straw. *Who will try it?*

If not convenient to use all these articles, any of them separately, it is thought would have a good effect. *Who will try them, and help determine which is the best?*

A light harrowing as soon as the ground is dry enough in the spring, is thought to benefit wheat—especially that which was late sown. *Who will try it?*

The use of the roller after the harrowing in of spring crops, especially if the land is stocked down, is thought greatly to benefit the grain crop, as well as the grass seed. It is said to be especially useful on sandy or loamy soils. *Who will spend half a day, and use up an oak log in constructing one, and try its effect?*

The steeping of seeds is thought to be an important means of cheaply increasing the productiveness of a crop. If you cannot or do not choose to go to the druggist, and purchase the carbonate of Ammonia recommended in the article taken from the Maine Farmer, a very good substitute may be found in stale urine, diluted with one half water, or in the liquid manure of the barn yard. Let a part of your spring wheat, oats, barley, and corn, used for seed, be soaked from 24 to 48 hours in this, then dried by rolling in plaster. Let

the rest of the seed be sown unprepared, and mark the result. *Who will try it?*

Clover, is thought to be a profitable crop,—whether for seed, meadow, pasture, or fallow, or for its beneficial effects upon the soil; and it is thought that good crops of it may be raised, almost every where in the State without a ruinous expense, by the application of a mixture of plaster, with unleached ashes—one part of the former to three of the latter, two bushels to the acre—or by putting on 60 bushels of leached ashes to the acre, with a little stable manure. *Who will try it?*

Barn-Yard Manures.

It is the clear dictate of economy, in a very important sense, that every barn-yard be nearly or quite cleaned of its contents as soon as the ground is fit to work in the spring. Some manure may properly be reserved for application to some particular crop, not sown until later in the season—such as carrots, ruta bagas, and the like. But, with this exception, no prudent farmer will neglect to carry out early and restore to his soils, such portion of what has been abstracted from them as lies within his reach, and in his way. The sooner manure is removed from the yard, where it usually lies exposed to sun, wind, and rain, the more it is worth; for all these serve to carry off a portion of its valuable properties. The sun and wind evaporate, and every rain leaches it, so that much of the materials which might have been worked up into wheat and corn, is lost beyond recovery.

For the same reasons it is bad economy to scatter manure in the field in small piles, and leave it exposed several days to the elements before it is plowed under. If circumstances make it impossible to plow immediately, the manure should be left in large heaps, at the cost of some additional labor in spreading, in order that the waste may be as little as possible. We have not unfrequently seen manure, carried out as above mentioned, remain above ground until it had become so nearly worthless, that when the farmer came to cultivate his field he was surprised to find scarcely any perceptible effect from it. Yet the bulk of the manure was not materially diminished, but the strength was gone—chiefly on the wings of the wind.

Long or unfermented manure should invariably be plowed in deep. This ensures its being perfectly covered, and if this is done while its virtues yet remain, its decomposition will go on in the soil, and enrich by the gases set free, the earth above it. But when it is covered imperfectly, so that it is left sticking up between every furrow, the cultivator must think himself well off if he does not receive injury instead of benefit from such use of it. Instead of decomposing and enriching the soil, it is in a fit state to mould and dry up when the heats of summer come on. Thus the effects of drouth are augmented. To insure thorough covering, the services of two or three boys are wanted to every team, to rake the manure into the furrow.

It is believed to be injudicious to apply manures immediately to white crops. This practice is apt to produce a luxuriant growth of straw which it exposes to rust, while the berry lacks plumpness. It is manifestly better to apply them to hoed crops, where they are productive only of good effects, and where in the after cultivation, the weeds introduced with them, may be exterminated. The succeeding season the remaining portions of the manure, then pretty thoroughly decomposed and mixed with the soil, will be in fit condition for the cereals, wheat, barley, oats &c.

It has been the practice of some farmers to apply a part of their manures to their summer fallows. The principles of scientific agriculture, it is believed, decidedly condemn this practice; for, independent of the waste of manure from being left till midsummer before it is carried out, the repeated plowings bring it up to the surface, thus exposing it to the hot sun and winds of summer after decomposition has fairly begun, and dissipating the gases which would have entered into chemical combination with the soil. Although much better than not to use manures at all, it is far from being an economical mode of applying them. They might have been made to give fertility to a field of corn, and then have had as much of their virtues left, as after such use on a fallow.

The Farmer's Library for March—contains a continuation of Thaer's Principles of Agriculture, and of the French treatise on milch cows, together with the usual interesting variety. Neither of the above mentioned works are concluded. We extract the valuable suggestions relative to the preparation of of seed corn.

Any person or association, wishing to procure this publication, can do so by sending $5 to Greely and McElrath, the publishers, New York city. It is worth the money.

Lardner's Lectures on Science and Art.—Number xii of this valuable work has come to hand—a beautiful pamphlet of 80 pages, treating principally of Astronomy. Lecture 1st shows "How to observe the Heavens; Lectures 2d and 3d reveal some of the wonders of the stellar universe; Lecture 4th, on the steam engine. Price 25 cents. Published by Greely & McElrath.

For the Michigan Farmer.

"Breaking up."

Mr. Hualbut.—The breaking up of new ground is a subject upon which we would naturally suppose all would concur, yet, one relative to which there appears to be at least some diversity of opinion, both as regards time and depth of plowing.

Some say "March or April is as good a time as any in the year;" others, that "any time between the first of April and middle of July will answer well enough for them;" some say "eight inches deep at least;" others, that "if the sward is taken off, they care not how shallow;" some say, "leave the furrows on the edge;" others, "turn them entirely over, the flatter the better."

In the spring and summer of '44, I was interested in the breaking up of seventy-two acres in Jackson county, which was commenced about the twenty-fifth of April, and finished the third of August, some being plowed every week during the interim, some deep plowed, some shallow, some well turned, some left on the edge.

The first "land," one hundred and sixty rods by fifteen, excepting two acres, was plowed previous to the seventh day of May, when the team went on to another part of the job, and the strip in the centre, about two rods by nearly one hundred and sixty, was left until the latter part of June, when that was also broken up.

The harrow, as heavy as three yokes of oxen could draw, was put on, the fore part of August, and the June-plowed, and that plowed the last of April and first of May, were treated exactly alike, the former being twice as mellow as the latter. Upon the former the wheat came up more quickly and evenly, grew faster, stood the severe drouth of June last better, and yielded, in my opinion, one third more per acre.

The reason must be plain to the most unobserving. The vegetation not being started before the early plowing, it grows up through the furrow-slice, keeping it green, and preventing decomposition, while the growing vegetation turned under by the later plowing, dies, and is decomposed, and with it the furrow-slice.

I apprehend that a light first crop, is not the only disadvantage growing out of the too early breaking up of new land.

I once plowed in a field, the soil of one part of which was dark and friable, having a rich appearance, while the other, without any cause which I could discover, appeared heavy, cohesive and barren. Upon inquiry, I ascertained that the former was broken up in June, and the latter in April. Since observing these and other instances of the injurious effects of the too early breaking up of new ground, I feel much in relation to it as did the bachelor out east, he "cared not what color was his wedding coat, if it was only blue." I care not what month new land is broken up for me, if it is only broken up in June.

Judging from my own limited observation and experience, I cannot resist the conclusion, that too late or too shallow plowing, is as injurious to the crop as plowing too early; and that the furrowslice turned entirely over, is preferable to that left on the edge.

If the foregoing ideas shall have the effect to draw out those of some of my more observing and experienced neighbors, the object at which I aim will be fully accomplished.

Hastings, March 20th, 1846.

H. Tower.

For the Michigan Farmer.

Cure of Scab in Sheep.

The invariable course pursued in the sheep-growing districts of Scotland to cure the above disease, is as follows:

Take 5 oz. of good plug tobacco to 1 gallon of rain water, cut up the tobacco and boil until the strength is extracted, cool it, and when the weather is dry, apply it to the whole flock in which the scab has made its appearance. This is done in the following manner: Cause a sheep to stand in a large tub, then with the hands part the wool on its back from the head to the tail, then with a pitcher or common lamp filler pour one quart of the juice into the crease along the back, but no faster than it naturally sinks away or passes down the skin of the animal, at the same time rubbing well with one hand on each side, and minding well the parts affected. This treatment should be renewed in about 10 days, if the weather permits, with one half the above quantity; and if some are very bad, they may require a third application.

By the remedy here mentioned, ticks are killed, as well as the minute insect which causes the scab. The Scotch generally wash their flocks in September in this way. They consider it conducive to their general health, and preventive of other diseases in the coming winter. A Caledonian.

The writer of the above informs us that he has known 3000 sheep cured of scab in a single season, by the above treatment. If effectual, it appears much preferable to any mercurial preparation.

The American Shepherd says, "the *best recipe*, however, is in the shape of a *preventive*, namely, warm shelters for the flock during winter, and good and nutritious food the year round. A poor sheep will always be the first to suffer from this loathsome disease."

Ed.

Soaking Seeds in Ammonia.

To the Editor of the Maine Farmer:

Dr. Holmes: — I have long been looking for the reports of our experimental farmers of Maine, on the result of the application of ammonia to their seed-wheat the last season. But I have looked in vain. It seems to me that a subject of that importance, coming as it did from so high authority, through the medium of the accomplished Colman, could not fail to so enlist the curiosity of the farmers of this State, where the wheat crop has of late been so uncertain, as to induce hundreds to give the thing a trial.

Experiments in *doctoring* seed have for several years been conducted in Germany by the most acute practical chemists, with, in many instances, wonderful results. But the subject in the most tangible shape in which it has been presented to us, comes from Mr. Campbell, of Scotland. His experiments with ammonia on wheat, oats, barley, &c., were attended with results so astonishing as to induce him to state with the greatest confidence, that one lb. of ammonia to a bushel of wheat, on poor ground, would cause as great yield as any quantity of the best manure. The thing looked so "cute" on paper, so simple in its nature, and so easy to be tested, that I determined, last spring, to give it a trial in a small way. I procured two pounds of carbonate of ammonia and prepared it according to Mr. Mr. Campbell's directions.* I failed in one important point in my experiment. I judged the quantity of water directed to be used in diluting the amonia, would be sufficient to soak the wheat from a dry state. I so applied it; but the water was all absorbed in five hours. I let the wheat stand 24 hours without adding more water, and then sowed. Five pecks of the wheat was sown to finish a field of several acres of moist, rough land, that had been long in pasture, and was planted to potatoes the year before. The remaining three pecks of prepared seed was carried to a field that was sowing to peas and oats. It was a piece of land too far from the barn to be easily manured and had been mowed till last year, 1844, when it was not worth the mowing, and in September we plowed it, and in the spring completed the culture with the harrow and roller; no manure. It was a piece of ground on which I could not have sowed wheat, having a reasonable measure of *faith* in reaping in autumn. And now for the result.

The piece first sowed proved to be full of thistles, which grew so stout that we cut the most of the piece while in a green state, for fodder. But the contrast through the season, between the wheat prepared with ammonia and the other, which was washed in brine, and then 1-4 lb. of nitre to the bushel, was so great that every plant could be selected by the most car eless observer. This wheat was about a foot taller than the other, and when the rest of the field was killed by rust so as to ruin the crop, this continued to grow and fill. The other piece, of the three pecks' sowing, was all, good looking wheat—the leaves broad, of a dark green through the season—the heads long and fine, and but for the weevil, I should have had a fine yield. As it was, I estimated the return from the two lbs. of ammonia, equal to *ten bushels* of wheat. I intend this year to give the thing a fair trial, and hope others will do so.

*Add sulphuric acid, (oil of vitrol,) diluted with 10 or 15 times its quantity of water, to the carbonate of ammonia, until the effervescence ceases. Sulphate of ammonia will be the product Add more water, if necessary, and use it as a steep.

Ashes.

To the Editor of the Michigan Farmer:— I observed in No. VI. of last volume of the Farmer, some inquiries relative to ashes, the best time and manner of applying the same &c. I had some experience on this subject while living in the State of New York, the results of which I will communicate.

Ashes, leached or unleached, should be applied in the month of March, or any time before it has done freezing in the spring. They are beneficial on every kind of soil.

With regard to their application to sward land, I pursued the following method, and with good success. The sward was broken up in the fall, laid as flat as possible, and afterwards rolled. The next spring in March, I hauled on all the ashes we made through the winter, and drove backward and forward, spreading them over the ground as evenly as possible. At a suitable time I went on with a sheep drag, and found that I could drag both ways, without tearing up the sod. It was planted with corn the 15th of May, and a better crop I never raised.

For potatoes, I do not consider ashes a good manure. They cause them to grow large vines, while the tubers will be all over scabby, and in some instances full of little rotten places.— But for grass, wheat, rye, oats, or any other grain, they are, in my estimation, before plaster for the effects of a good coat of ashes can be seen for several years, while plaster has to be applied annually, in order to derive any benefit from it.

I think it will be found on experiment, that ashes applied early in the spring are more beneficial than if deferred until late.

Were the value of this article properly appreciated, we should not see farmers carting it 10 or 15 miles to the potash makers for six or seven cents a bushel. No, no, they would apply it to their farms, and go to market in-

stead, with a load of good plump wheat. For the purpose of application to grass or wheat land, ashes are worth to the farmer, 25 cents a bushel.

Oceola, March 2d, 1846.

A Subscriber.

Suggestions for preventing injury to fruit by late spring frosts. When frosts of extreme severity occur after vegetation is far advanced, every expedient is liable to failure. But in most cases of untimely frosts, it is believed the ill effects may be warded off by timely precautions. The following are some of the measures which have been recommended, in addition to retarding vegetation by keeping the roots cold.

1. Placing bundles of straw, thoroughly wet, in the tops of trees, when a frost is apprehended. A gentleman informed us that he knew a case in which fruit was saved where this plan was made use of, during the severe frosts of last spring, while that in neighboring orchards, similarly situated was destroyed.—We are obliged to add, however, that in another instance which has come to our knowledge, the plan is said to have proved ineffectual.

2. Plowing the orchard deeply, after vegetation is so far advanced that fruit is endangered. This has been before mentioned.

3. "Intermixing a thick rope among the branches of a fruit tree in blossom, with the end directed downwards so as to terminate in a pail or tub of water. Should a slight frost occur in the night, it will not in the slightest degree affect the tree, while the surface of the pail which receives the rope will be covered with thin ice; though the water placed in another pail by the side of it, by way of experiment, may not, from the slightness of the frost, have any ice on it at all. In this case, the rope aids the evaporation of the water, and thereby cools it down to the freezing point."—*Johnson's Encyclopedia.*

Millet on Summer Fallows--Important Suggestion.

Mr. Hurlbut:—I wish to throw out an idea relative to the use of millet for hay.

It is well known to the farmers in this section of the State, that the soil of the oak openings is not well adapted to grass. Now this deficiency can be supplied by the culture of millet by sowing on the summer fallow four quarts to the acre the first days of June, and cutting the same in August, in time to plow again, and sow to wheat in good season. This operation will not injure the wheat crop, as the plowing in of the stubble and roots of the millet will go to restore fertility; and we can obtain in this way, one and a half tons to the acre of hay that is preferable to any English hay.

Suppose some one should try the experiment, and communicate through the Farmer the result. SOLOMON RUSSEL.

March 18th, 1846.

Middleville, March 20, 1846.

Mr. Hurlbut:—Please to tell us through the columns of your paper the price of the sub-soil plow now in use in this State; also, the price of the corn crusher without the power advertised in your paper, and accommodate some of your subscribers. Yours respectfully,

A. C. Hill.

We have had several inquiries similar to the above, and for the information of those interested have ascertained of our townsman, J. T. Wilson, that the price of the corn-crusher is $80. He is not the owner of the right for the western counties. The owner is understood to be Mr. Hogsett of Kalamazoo.

We are not informed relative to the price of Smith's sub-soil, or trenching plows. The proper person to apply to, we believe, is J. R. Grout Esq., of Birmingham, Oakland Co., who is interested in their manufacture.

☞*Several communications, crowded out, will receive attention in our next.*

GARDEN SEEDS.

An assortment of fresh garden and flower seeds, and double Dahlias just received and for sale at this office.
Also, a few copies of Morrell's American Shepherd.

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MICHIGAN FARMER.

TERMS FOR VOL. IV.

During the ensuing year, all subscriptions will commence with the volume. The price of a single copy is fifty cents. To clubs, a reduction is made, namely, five copies for $2, eight copies for $3; and in this proportion for any larger number. No reduction allowed unless payment be made in advance.

To former subscribers, and to all others who may be vouched for by any resident agent, the paper will be sent on a credit till October next. To all demands remaining unpaid on the 1st of January next, an addition of 25 per cent. will be made.

All persons retaining the present number, will be considered subscribers for the ensuing year, (except, of course, those whose year has not expired.)

ADVERTISEMENTS

Of agricultural implements, farms for sale, &c., would be inserted on our last page at $1.75 per folio, for 3 months, or 75 cents for the first insertion, and 50 cents for each continuance. As the circulation of the Farmer is now probably greater than that of any other paper in the State, and as the number of advertisements is very limited, it is evidently a highly advantageous medium for advertising.

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